UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

4/10/96
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APR 10 1996

REPLY TO THE ATTENTION OF:
SR-6J

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Ronald Frehner
Project Coordinator - ACS NPL Site
Conestoga-Rovers & Associates
1801 Old Highway 8, Suite 114
St. Paul, Minnesota 55112

Re: Disapproval of Upper Aquifer Investigation Technical Memorandum; American Chemical Service, Inc., NPL Superfund Site, Griffith, Indiana

Dear Mr. Frehner:

The United States Environmental Protection Agency (U.S. EPA), and the Indiana Department of Environmental Management (IDEM), have reviewed the Upper Aquifer Investigation Technical Memorandum dated March 1996 for the Pre-Design Site Investigation at the American Chemical Service, Inc., National Priorities List (NPL) Superfund Site located in Griffith, Indiana (ACS Site).

The Upper Aquifer Investigation Technical Memorandum was submitted by Montgomery Watson on behalf of Respondents for ACS Site the in accordance with the Unilateral Administrative Order (Docket No. V-W-95-C-260).

The enclosed comments must be addressed in the Second Draft of Upper Aquifer Investigation Technical Memorandum. The revision must be submitted within 21 days of receipt of this letter. However, Respondents may submit the revision sooner in order to maintain the overall schedule.

If you have any questions, or require clarification, you may reach me at (312) 886-4745.

Sincerely,

Sheri L. Bianchin

Sheri L. Bianchin,
Remedial Project Manager
Superfund Division
Remedial Response Section # 3

Enclosure

cc: Peter Vagt, Montgomery Watson
Joseph Adams, Montgomery Watson
Holly Grejda, IDEM, Office of Superfund
Steve Mrkvicka, Black & Veatch Waste Science, Inc.
Mike McClary, ORC
Steve Mangion, U.S. EPA, HQ

ENCLOSURE

Review Comments
Upper Aquifer Investigation Technical Memorandum, March 15, 1996
American Chemical Services, Inc.
Superfund Site, Griffith, Indiana

GENERAL COMMENTS

1. There is a tendency to overstate the significance of the results of the field screening results. While the results are meaningful, it is important to realize the limitations of the data since it is only screening level data. The intent of the screening-investigation was to obtain an inference of the plume(s) boundaries; these inferences must be verified subsequently with the installation and sampling of a monitoring network. Hence, rewrite the text to 1) explain the goals served by the upper aquifer investigation; 2) explain the data including the data limitations; 3) provide reasonable conclusions along with rationales; and 4) provide recommendations and proposals along with the corresponding rationales.

2. It is unclear if the structures portrayed on the maps have been surveyed in and are accurately depicted on the maps. This is important in visually understanding the character and extent of the contaminant plume.

3. It is unclear whether the residential well discussion and represented locations refer to all or part of the private drinking water wells (e.g., residential wells) in the area of the site. The document needs to illustrate the location of all private wells near the site, indicate where the wells and discuss sampling those that may potentially be impacted by contamination migrating off-site. In addition, the report needs to state the intended analytical parameters for the proposed residential well samples. Lastly, as is mentioned further below, full scan analyses of these residential wells would be prudent for the first round of sampling. (See also specific comments below).

An alternative to providing the above-requested information regarding all the private well users in the revised upper aquifer technical memorandum is to include this information in the lower aquifer technical memorandum. However, Respondents must still sample the four (4) proposed wells for full scan to coincide with the collection of the groundwater samples from the new upper aquifer wells.

4. The number and location of proposed additional upper aquifer monitoring wells; however, the presentation of data makes it difficult to appears inadequate adequately determine where additional wells are needed. First, the inferred plume is difficult to correlate with the existing ground water contours. Further, contour maps illustrating benzene, acetone, and total

organic compound concentrations need to be provided to evaluate the distribution of these contaminants and the appropriate locations of additional monitoring wells. A map needs to be provided that illustrates all existing upper aquifer monitoring wells and piezometers, as well as proposed additional monitoring wells and groundwater elevation contours. When selecting the network, consider that the ultimate goal of this investigation the monitoring network will be used to verify the character, nature and extent of contamination today and over time. As is presented in the specific comment 26 below, U.S. EPA believes additional upper aquifer wells are necessary. In specific comment 26 below, U.S. EPA has shared its specific judgments of the deficiencies in the proposed monitoring network. U.S. EPA's opinions may change somewhat when the technical memorandum is supplemented with the information requested by U.S. EPA.

5. The significance of the surface water sample needs discussion. Certainly the level of contamination found begs discussion **and** a proposal for additional work now that we know of the contamination. See also other specific comments below.

6. With regard to the issue of abandoning wells, U.S. EPA will defer comments until we see a proposal and data summary from the Respondents.

7. Piezometer, P-57, as proposed in Respondents' technical memorandum dated November 8, 1995, should be installed.

8. A staff gauge should be installed in the retention pond south of Colfax Avenue and Reder Road, as verbally proposed by Respondents.

SPECIFIC COMMENTS

9. **Page 1.** The report states that the top-of-casing elevations for piezometer P-52 and monitoring well MW-18 were resurveyed during the Upper Aquifer investigation. The new survey values are presented, but the document does not discuss the difference between the old survey values or state the effect on the groundwater flow patterns. It is not clear if the elevations P-52 and MW-18 are different than previously determined. The text should note any changes and their significance, or, at least note where this is discussed. If no significant difference are attributed to the resurveyed elevations this point should also be made.

10. **Page 1, 2nd paragraph.** The boundaries of bulleted areas A,B,C, and D described in this paragraph are not clear. Present the boundaries of these areas on Figure 1.

11. **Page 2, 3rd paragraph.** Present the location of MW-9 on Figure 1.

12. **Page 2, 4th paragraph.** Provide the rationale for selecting

the locations of the 8 "deep" groundwater samples described in this paragraph.

13. **Page 3, top of page.** On figures, provide the locations of the UST and industrial facilities discussed in item 2 at the top of the page.

14. **Page 5 & 6, Results and Conclusions.** The document states the suspected reasons for the presence of acetone at the site, including analytical difficulties, common laboratory contaminants and identification of acetone in vegetation, insects and bacteria as a naturally occurring metabolite. The analytical difficulties add to the complexity of interpreting the data. However, since the other hypotheses are not supported, these paragraphs should be deleted or at least substantially qualified. Discuss further the data quality, usage and limitations.

There are multiple hypotheses that may be generated in explaining the widespread detections of acetone on-site; however, it is important to keep in mind the quality of the data generated by this type of investigation. Hence, the limitations of this data should be clearly stated since it will affect the conclusions. Furthermore, since acetone levels are very high in some locations, it is appropriate to discuss how these high levels may have effected detection limits of other parameters of interest. The most likely hypothesis that can be drawn from the data is that there is widespread "contamination" of acetone on site. Also, confirmatory samples which will be analyzed under strict QA/QC protocols and validation criteria will help define the contamination.

One potential factor of significance is that if these high levels of acetone do reflect lab "contamination", then the validity of all data, in general, is suspect due to the doubts cast on the quality assurance/quality control (QA/QC) of the collection and analysis of the samples. All data should then be further qualified.

Also, it seems inappropriate to attribute acetone concentrations to natural processes or lab contamination alone (especially with concentrations of 50 ug/l and greater). Further, there is no evidence to suggest that natural processes have contributed to acetone concentrations detected. Lab contamination is an inadequate explanation for detected concentrations of acetone which were less than 50 ug/l because high concentrations of acetone were found upgradient of these samples. At the 45 sampling locations where acetone was detected, 28 locations had acetone concentrations well above 50 ug/l. Again before the validity of the aforementioned claims can be evaluated, supporting technical documentation must be provided. Confirmatory samples which will be analyzed under strict QA/QC protocols and validation criteria are necessary.

In addition, scientific documentation which discusses that acetone is naturally occurring in a wetland environment should be provided. When evaluating the concentrations (ranging from non-detect to 50,600 ppb) as provided in this document, it appears unlikely that the acetone is naturally occurring. Acetone is not easily formed due to the need to form a double bond. When alcohols break down, the final compound to be would be methane and water. Furthermore, acetone is very volatile and may well volatilize off during the exothermic reaction produced during the breakdown process of the alcohols and the resultant methane. Thus, a minimal amount would be present, if at all. Lastly, since acetone has the potential to migrate as rapidly and/or more rapidly as benzene, then it may help to explain why acetone is found at the leading edge of the groundwater plume.

15. **Page 6, paragraph 2.** As discussed above, the text states that low concentrations of acetone detected during the investigation ". . . should be viewed as probable instrument cross-contamination or naturally occurring breakdown products rather than viewed as representative of groundwater contamination." Based upon the frequency and magnitude of acetone detections this statement appears presumptuous. Furthermore, acetone was selected as a contaminant of concern in the ROD. Supplement this discussion to at least talk about acetone as a contaminant of concern at this site.

16. **Page 6, Area A, Results.** As mentioned above, it is possible the high concentration of acetone may effect detection limits, such as at GP58. Hence, it is possible that the detection limits changed from GP57 to 58. Discuss further the data quality, usage and limitations.

17. **Page 6, Conclusions, last paragraph, first sentence.** Add the word approximate before the word extent.

18. **Page 6, Conclusions, last paragraph, second sentence.** Further explain the use of "zero" in the context of the line of "zero" contamination. It should be explained to state that the line of "zero" is the relative area where VOC contamination dropped to below reportable limits.

19. **Page 7.** Upward gradients in the wetland are hypothesized as controlling the VOC plume extent. While this is a reasonable hypothesis for the dissolved phase, it can be easily verified with a monitoring network installed later. Piezometers will verify gradients. If necessary, samples could also be obtained of both the groundwater and surface water. Periodic surface water sampling would seem important if this is true. Also, since PCB transport is still an issue, then surface water sampling is even more important. Discuss how these hypotheses will be verified.

20. **Page 8, Conclusions, last paragraph, first sentence.** Add the word approximate before the word extent.

21. **Page 8, Conclusions (paragraphs 2 - 4).** Regarding the references to the UST and pipeline as potential sources of BTEX contamination, there is not sufficient data to support that the UST and pipeline are contributing to BTEX contamination. Provide additional information to support this inference or delete the inference.

22. **Page 8, last paragraphs (Conclusions).**

Delete the paragraph. There is no basis for stating that VOC concentrations in area C are "not significant". It is inappropriate to attribute acetone to natural processes or lab contamination. (See previous comments). A more appropriate conclusion would include further study of this area, including quarterly monitoring well sampling of M-1S and MW-15.

23. **Page 9, Conclusions, second to last paragraph, first sentence.** Add the word approximate before the word extent.

24. **Page 9, Conclusions, last paragraph, first sentence.** Add the word approximate before the word extent.

25. **Page 10, Area C bullet.** This references a monitoring well "MW01". It appears that this reference is for the Griffith Landfill well M-1S. This needs to be corrected, to prevent confusion with the ACS MW-01 well that was destroyed in 1990.

26. **Page 10.** Based upon the information provided, following are U.S. EPA opinions and recommendations of the proposed monitoring network. Although final well locations will be verified by U.S. EPA and IDEM in the field, Respondents should provide a proposal which considers the following.

a) Area A:

Surface water sampling should be planned. Nested piezometers should be installed to verify gradients and allow for periodic chemical water quality samples to be obtained. Piezometers will be relatively easy to install and maintain. Locations should be on either side of the hypothesized chemical boundary and there should be a total of 6, two-piezometer nests installed. Given the historic conditions noted in MW 10 and vicinity, wells will likely be needed to show chemical changes through time and should be anticipated.

An additional monitoring well is suggested approximately 100 feet southeast of the midpoint between MW-13 and M-5S. The distance between MW-13 and M-5S is over 1000 feet, and MW-14, the closest monitoring well between these wells, is contaminated. Hydropunch

samples analyzed by a field GC can aid in the placement of monitoring wells; however they cannot reliably rule out the need for a monitoring well. Reliable long-term monitoring will require a well in the recommended location.

b) Area B:

The inferred plume is difficult to correlate with the existing ground water contours. In addition, it is necessary to measure plume concentrations both within and on the edge of the inferred plume.

Two wells are recommended (a cluster at each location) along the inferred plume axis, in addition to the well locations already shown. One monitoring well is suggested approximately 150 feet northeast of P-62, to provide adequate monitoring coverage of this area. An additional monitoring well is suggested approximately 500 feet south of P-62, to better define the nature of contamination within this area.

c) Area C:

No additional wells may be necessary for area C; however, wells MW-1S and MW15 should be added to quarterly monitoring to ensure adequate coverage of these areas. Delete or qualify the second sentence of this paragraph, which attributes acetone detection to field GC or natural processes.

d) Area D:

The proposal for the wells designated E and F are insufficient. Given a linear expanse of more that 1,000 feet along the northern portion of the study area and the distance from the source areas the following is needed:

i) Samples are needed at a minimum of 4 locations on the northern boundary of Area D are recommended. At least two locations will consist of a shallow and deep pair of wells in the upper aquifer. Drilling shall be to and confirm the clay layer. If the upper sand is less that 15 feet thick in this area, single wells with a 10 foot well-screen should be allowable in lieu of the two well cluster.

ii) Several shallow well clusters are anticipated along Colfax Avenue. A monitoring well is suggested between P-58 and P-59 just outside the line where benzene was detected, as specified on figure 5. This well will provide coverage of the area between MW-11 and MW-12, which are over 1000 feet apart. A monitoring well is suggested near P-63 to better define the nature of contamination in this area.

27. **Page 11, paragraph 2, Residential Well Identification and**

Sampling.

It is unclear whether the residential well discussion and represented locations refer to all or part of the area residential wells. The document needs to illustrate the location of all private wells near the site, and discuss sampling those that may potentially be impacted by contamination migrating off-site. Provide a map or database of all known drinking water wells in the area. Also, include a discussion of the local businesses in the area, including if the businesses have a private well which is used as a potable drinking water source. Include on a figure the location of the municipal water supply lines and provide a brief discussion of the municipal water supply. This will avoid any confusion as to the elimination of certain residences/businesses from sampling consideration in the vicinity of the site.

As previously discussed, there may be additional drinking water wells (primarily residences) which will need to be included in this sampling round.

The residential wells proposed for sampling are screened in the lower aquifer, and are located south of the site. Any wells in the area that are in the upper aquifer should be proposed for sampling. Given that the gradient of the lower aquifer is northerly, residential and industrial wells downgradient (north) of the site should also be identified and sampled.

Finally, residential well samples should be analyzed for the full scan of analytical parameters to assure that no contamination escapes detection to be the most protective of human health. Provide rationales for the residences which are proposed to be sampled.

28. **Page 11, last paragraph.** This states that "One surface water sample was collected near P-61 north of the ACS facility (Figure 2)." The report previously states that the sample collected near piezometer P-63, and Figure 2 does not illustrate the location of the surface water sample. This needs to be corrected.

Furthermore, no conclusion is provided on how the Respondents intend to proceed based on this new information. Clarify this approach.

29. **Page 11, Surface Water Samples.** The surface water sample location was not plotted on the map. The surface water sample appears to have been collected near P-63, rather than P-61. Include the sampling location and ditch on figure 2.

Given the levels found, more surface water sampling will be necessary. The hypothesized upward gradients in the wetland also

point to the need for additional surface water sampling. Discuss how this will be approached and provide a proposal. Results, conclusions, and recommendations for the surface water sample location should be included in the text.

30. **Table 1.** Include all wells on Figure 1. For instance, MW 10C is not shown and should be included.

31. **Table 1, Summary of Sample Coordinates and Depths.** The text indicates that GP-54 was not sampled. Also, incorporate the east/north coordinates.

32. **Table 2, Tabulation of Selected VOC Detections Upper Aquifer Investigation.** The column of total VOCs appears to be misleading. It appears that the total column is a total of acetone, benzene and BTEX columns. Clarification of which VOCs comprise this total VOCs column is needed.

33. **Appendix A.** Place a title on the table. In addition, several items need clarification, including, (a) provide explanations for certain concentrations being placed in italics; (b) as previously discussed, the total VOCs column appears confusing and needs additional clarification; (c) on page 2 of 15, GP-60 indicates an acetone concentration of 3560 with an asterisk. Provide a footnote to explain the meaning of the asterisk, and (d) the nomenclature utilized for trip and field blanks is inconsistent throughout the table (i.e., GPTB01 1/24/96, GP-1/26/96/TB, TB 2/1/96). Correct these inconsistencies.

34. **Appendix B.** The information or data was not timely submitted to IDEM. In the future, provide the information to both U.S. EPA and IDEM along with the document which it is supposed to be included in.

35. **Appendix B.** While reviewing the time-series data for IW-1 contained in Appendix B, U.S. EPA noted that tetrachloroethene (PCE) concentrations dropped from approximately 10 to 12 ug/l near the start of the pumping and leveled off at about 5ug/l after 180 minutes. In reporting this data, it is not accurate to state that the time series data indicated that PCE concentrations at the well began high and then over time dropped to zero. Rather it appears that PCE concentrations from 180 to the end of the test (i.e., 480 minutes) leveled off at a concentration of approximately 5 ug/L. This may be important in the lower aquifer technical memorandum as well as the well abandonment proposal.